THE

CHEMIST

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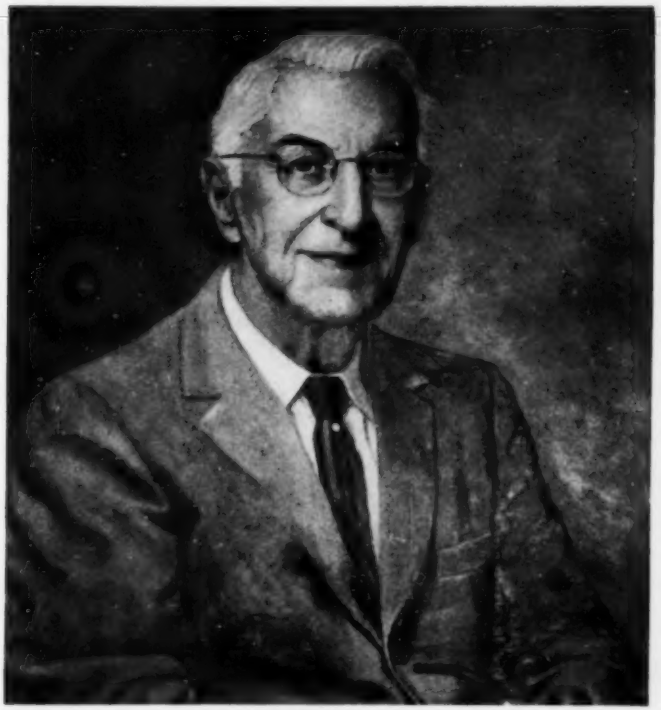

Portrait of

Dr. Jack P. Montgomery, Hon. A.I.C.

(*See page* 393)

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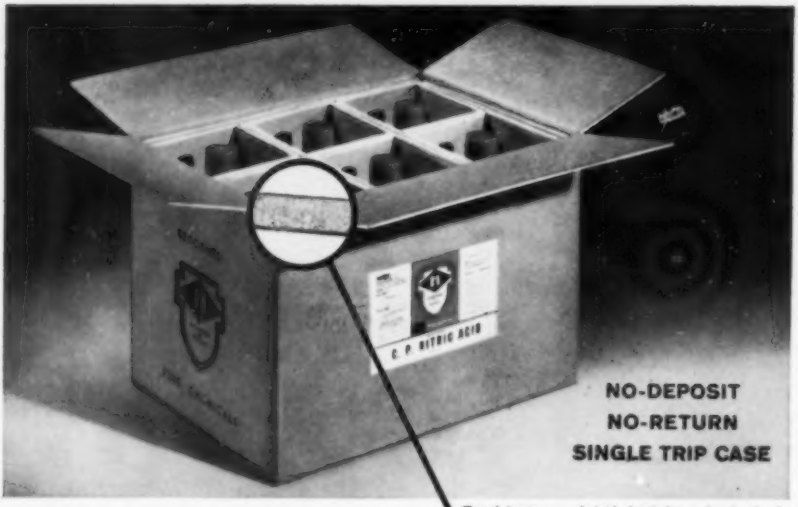

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Deadlines for THE CHEMIST: For the December issue the deadline is November 15.

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THE AMERICAN INSTITUTE OF CHEMISTS does not necessarily endorse any of the facts or opinions advanced in articles which appear in THE CHEMIST.

IN THIS ISSUE

Editorial: The AIC Supports Qualified Clinical Chemists 385

Special AIC Announcements

- **Honorary Membership Presentation** 386
- **Additional Committee Members** 386
- **New Pittsburgh Chapter Organizes** 386
- **To All Chapter Chairmen** 386
- **New Officers of Piedmont Chapter** 387
- **New Members of the "200 Club"** 387
- **Missing Addresses** 387

Professional Appointments 388

Creative Enterprise Through Ever-Expanding Research — The Importance of Human Factors, *Dr. Walter J. Murphy, Hon. AIC* 389

One Hundred Years of Research, *Dr. Foster Dee Snell, Hon. AIC* 391

Growth Through Research, *Dr. Paul Bachman* 391

Academic Chemistry in the United States Between 1895 and 1920, *Dr. Jack P. Montgomery, Hon. AIC* 393

Jack Percival Montgomery, *Dr. Emmett B. Carmichael, F.A.I.C.* 402

Tribute from the Chemistry Faculty, *Dr. Robert D. Brown, F.A.I.C.* 405

Tribute from Former Students, *John M. Jernigan, F.A.I.C.* 405

Presentation to a Beloved Teacher 406

Communications

- **Professional Status and Employment Procedure** 409
- **"When Should I Change My Job"** 410
- **Strange Coincidence** 410

Report of the Committee on New Chapters & Expansion 411

Opportunities 413

For Your Library 413

Opportunities Increase in High Temperature Technology 416

About AIC Members 416

TO COME IN DECEMBER

Each year, in this Holiday month, the Student Medal Awards are featured, and the prize-winning Student Medalist Essay is printed. Dr. E. M. Kipp, F.A.I.C., director of research, Foote Mineral Co., Philadelphia, Pa., presents "The Professional Chemist in Industry", a realistic picture of the industrial situation. Also, we have an extraordinary article, "The Problem of Employment of Scientists Above Age 50 — a New Approach", by Dr. Johan Bjorksten, F.A.I.C., president, Bjorksten Research Foundation, Madison, Wis., which will both astonish and inspire.

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Nopco Chemical Co. 408
Phoenix Chemical Labs 415
Robinette Research Labs., Inc. 410
Scientific Glass Apparatus Co., Inc. 381
Foster D. Snell, Inc. 418
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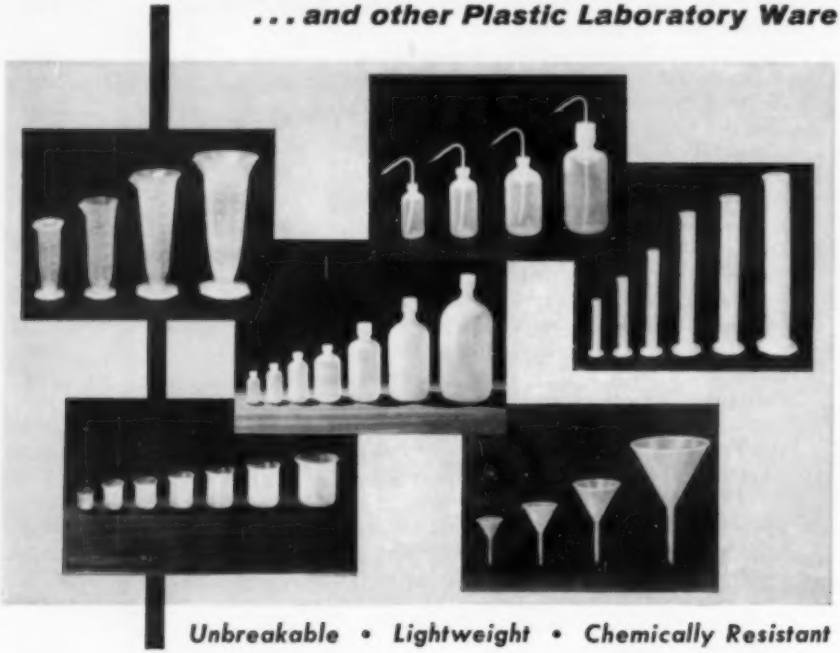

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EDITORIAL

The AIC Supports Qualified Clinical Chemists

THE public in general and legislators in particular sometimes exhibit an astounding lack of information about chemists and what they do. Nowhere is this more evident than in those legislative actions that encroach on the rights of qualified chemists to practice clinical chemistry or to direct clinical chemistry laboratories.

Such legislative actions usually take the form, as threatened in Alabama, of requiring that physicians (untrained though they may be in clinical chemistry) supervise all clinical laboratories in the State; or, with more obvious folly, as reported to exist in Texas, that pharmacists be required to supervise clinical laboratories, thus leading to the ridiculous situation where a pharmacist, though he be a recent graduate, is qualified and required by the law to supervise the work of an experienced clinical chemist who may hold several advanced degrees in his field.

Legislators traditionally follow the public's lead. A few inquiries will show that many average persons think that a clinical chemist is a hospital technician, expected to be under the supervision of a physician, or of a pharmacist—who in turn is thought of as being a "chemist"! Reflecting this, perhaps also influenced by those who exploit ignorance, legislators thus introduce legislation against chemists which is also inimical to the public good.

A period of time will be required to educate the public, but it is less of a task, meanwhile, to inform legislators about chemists and their work. While doing this, chemists should also watch for proposed legislation that would restrict qualified chemists in the practice of their profession. Such activity should be reported to the AIC and to other professional groups as soon as it appears. Now, as in the past, misguided proposals can be thwarted, but once legislation has been adopted, it is more difficult to have it corrected or nullified.

The proposed anti-chemist legislation in Alabama was brought to the attention of the AIC Council last Spring. At the 36th Annual AIC Meeting, a resolution in support of qualified clinical chemists was passed in principle, and referred to our Committee on Clinical Chemists, of which Dr. Kurt M. Dubowski, F.A.I.C., is chairman, for effective wording. The following wording was approved at the October 1, 1959 meeting of the National Council:

Motion

That the American Institute of Chemists go on record, and further make known its position to Federal, State and Local legislative and executive bodies and other interested organizations and persons, that

(1) Chemists adequately qualified by education, experience and competence, including those chemists certified by the American Board of Clinical Chemistry, are qualified to engage in the independent professional practice of clinical chemistry and independently to direct, conduct, and operate clinical chemistry laboratories without the supervision of members of any other profession; and

(2) The American Institute of Chemists, in the public interest, opposes the enactment of any laws, statutes, or regulations which would deny to such qualified clinical chemists the right independently to conduct clinical chemistry laboratories.

Special AIC Announcements

Honorary Membership Presentation

Dr. Lincoln T. Work, F.A.I.C., consulting engineer of New York, N. Y., and past president of the AIC, will receive Honorary AIC Membership, at a meeting sponsored by the New York Chapter, November 12, at the Shelburne Hotel, New York, N. Y. Dr. John R. Dunning of Columbia University will speak for the recipient. Dr. Work's acceptance address is entitled, "The Unchanging Aspects of Professionalism in a Changing World."

Additional Committee Members

A list of the AIC Committees for the 1959-60 fiscal year appears in the September issue of THE CHEMIST. Please add the following names to the Committees indicated:

Chapter Activities

Dr. Joseph F. Abere, *co-chairman*

Honorary Membership

Fred J. Emmerich
Dr. William J. Sparks
Raymond Stevens

New Pittsburgh Chapter Organizes

The organization meeting of the new Pittsburgh Chapter was held September 25, at Mellon Institute, Pittsburgh, Pa., with the following officers being elected:

Chairman, Emerson Venable, Consultant, 6111 Fifth Ave., Pittsburgh 32, Pa.

Secretary-Treasurer, Dr. Robert W. Freedman, Pittsburgh Consolidation Coal Co., Library, Pa.

To All Chapter Chairmen

The chairman of each Chapter is a member of the Committee on Nominations. (AIC Constitution, Art. V, Sec. 3). It is the function of each member of this Committee to nominate officers and councilors-at-large to be placed on the annual nomination ballot for mailing to the membership. The membership will then choose the names which will appear on the election ballot.

Elections to be held in the Spring of 1960 will be for a president-elect, a secretary, a treasurer, and three councilors-at-large. The Secretary

will notify each member of the Committee on Nominations when these nominations should be made. Meanwhile, it is not too early to give some thought to the matter, bearing in mind that only Fellows may be nominated for these offices.

New Officers of Piedmont Chapter

The Piedmont Chapter has elected the following officers:

Chairman, Dan L. Henry, Associate Director, Law & Co., Atlanta 1, Ga.
Chairman-elect, Dr. Ivy M. Parker, Plantation Pipe Line Co., P.O. Box 1743, Atlanta 1, Ga.
Secretary-Treasurer, Angus J. Shingler, The Coca-Cola Co., P.O. Drawer 1734, Atlanta 1, Georgia
National Council Representative, Dr. Orville E. May, Vice President, The Coca-Cola Co., P.O. Drawer 1734, Atlanta 1, Ga.

Delegate to Cooper Union Convocation

The AIC will be represented at the 100th Anniversary Academic Convocation of The Cooper Union of New York, N. Y., by John Kotrady, AIC secretary. The program, following the Academic Procession on the morning of November 2, includes addresses on "Science and Society" by Sir John Cockcroft, United Kingdom Atomic Energy Authority, and Dr. Harold C. Urey, Institute of Nuclear Studies, University of Chicago. In the evening, at the Waldorf-Astoria, The Hon. Lester B: Pearson, House of Commons, Dominion of Canada, will speak on "Government and Society."

New Members of the "200 Club"

The 200 Club, composed of AIC members who will endeavor to bring in ten AIC members during the year (page 354, Oct. CHEMIST), welcomes the following additional persons:

Dr. Walter S. Guthmann, F.A.I.C.
John Kotrady, F.A.I.C.
Dr. Jack P. Montgomery, Hon. AIC
Wilbur A. Riehl, F.A.I.C.
R. G. Skinner, F.A.I.C.
Dr. William S. Wagner, F.A.I.C.
Dr. Austin B. Wilder, F.A.I.C.
Dr. John L. Wilson, F.A.I.C.

Missing Addresses

The Office of the Secretary will appreciate receiving the current addresses of the following members, whose mail has been returned from the addresses shown:

Dr. Benjamin Arden, F.A.I.C., 5006 Coliseum St., Apt. 4, Los Angeles 16, Calif.
Dr. Albert I. Arnoff, M.A.I.C., Massachusetts By-Products Co., 53 State St., Boston, Mass.
Catherine Clare Blumenstock, A.A.I.C., 2267 Hudson Blvd., Jersey City, N.J.
Charles Brecher, A.A.I.C., 803 E. 49th St., Brooklyn 3, N.Y.
Frank C. Byrnes, Mid-West Labs., Inc., 1952 W. Irving Park Rd., Chicago 13, Ill.
James W. Gillett, A.A.I.C., 2930 Magnolia, Berkeley, Calif.
Ronald G. Gunther, A.A.I.C., 572 Laurel Ave., St. Paul 2, Minn.
Elbert M. Hubbard, A.A.I.C., 311 S. Doris Ave., Monahans, Texas.
James R. LoMonte, A.A.I.C., 23-B Addison Pl., Clifton, N.J.
Thomas R. Shanley, M.A.I.C., 2001 Independence, Apt. 6-2W, Kansas City, Mo.
Dr. Gordon H. Strite, F.A.I.C., Research Div., Dow Chemical Co., Lake Jackson, Texas

Charles W. Struck, A.A.I.C.,
Route 130, Hightstown, N.J.
Frank K. Thorp, A.A.I.C.,
227 Oakhill Ave.,
East Lansing, Mich.

Professional Appointments

Nov. 1959. (Day to be announced). **Beaver Falls, N. Y.** Meeting of Beaver Falls Chapter. For information: Clark E. Thorp, Fiber Products Research Center, Beaver Falls, N. Y.

Nov. 12, 1959. New York, N. Y. Shelburne Hotel. Meeting of New York Chapter. Social Hour. Dinner. Presentation of Honorary AIC Membership to Dr. Lincoln T. Work, F.A.I.C., past president of the AIC. Speaker for the recipient, Dr. John R. Dunning, Columbia University, New York, N. Y. Acceptance address by Dr. Work: "The Unchanging Aspects of Professionalism in a Changing World."

Nov. 12, 1959. Philadelphia, Pa. Engineers' Club. Meeting of Philadelphia Chapter. Dinner 6:30 p.m. Talk, 8 p.m. Speaker, Robert C. Stanfill, Chief, Philadelphia District, U. S. Food & Drug Administration. Topic: "The Chemist and Public Health." Make reservations by Nov. 9 with Dr. E. M. Kipp, Foote Mineral Co., Berwyn, Pa. (NIagara 4-6800.)

Nov. 13, 1959. Minneapolis, Minn. Meeting of Twin City Chapter. Panel discussion: "What Should Technical Societies Offer Their Members?" For information: Dr. Joseph F. Abere, Minn. Mining & Mfg. Co., 2301 Hudson Rd., St. Paul 6, Minn.

Nov. 30, 1959. Kansas City, Mo. Rockhurst College. Midwest AIC Chapter meeting. Dinner (Cafeteria) 6:30 p.m. Meeting 7:30 p.m. Annual Elections.

Dec. 1959 (exact date to be announced). **Wilmington, Delaware.** Kent Manor Inn. Meeting of Delaware Chapter. Social hour, 6:15 p.m. Dinner 7:00 p.m. Speaker, Dr. William J. Sparks, Hon. AIC, scientific advisor, Esso Research & Engineering Co., Linden, N. J. For information: Dr. Stephen D. Bruck, E. I. du Pont de Nemours & Co., Inc., Experimental Sta., Carothers Research Lab., Wilmington, Del.

Dec. 8, 1959. New York, N. Y. The Chemists' Club, 52 E. 41st St., New York 17, N. Y. Luncheon meeting of the AIC Board of Directors and National Council. Board meets at 12:00 noon; Council at 12:15.

Dec. 10, 1959. Philadelphia, Pa. Engineers' Club. Meeting of Philadelphia Chapter. Luncheon 12:00 noon. Topic and speaker to be announced.

Jan. 6, 1960. New York, N. Y. Shelburne Hotel. Meeting of New York Chapter. Presentation of Honorary AIC Membership to Florence E. Wall, F.A.I.C. All Charter Members of this area will be presented.

Jan. 7, 1960. Pennsylvania. Meeting of Philadelphia Chapter. Honor Scroll to be presented to Dr. R. A. Dutcher, of Pennsylvania State University, University Park, Pa. Topic and location to be announced.

Jan. 15, 1960. Minneapolis, Minn. Meeting of Twin City Chapter. Honor Scroll Award. For information: Dr. Joseph F. Abere, Minn. Mining & Mfg. Co., 2301 Hudson Rd., St. Paul 6, Minn.

Feb. 2, 1960. Wilmington, Delaware. Kent Manor Inn. Meeting of Delaware Chapter. Social hour, 6:15 p.m. Dinner 7:00 p.m. Speaker Dr. Ivor Griffith, F.A.I.C., president, Philadelphia College of Pharmacy & Science, Philadelphia 4, Pa. For information, Dr. Stephen D. Bruck, E. I. du Pont de Nemours & Co., Inc., Experimental Sta., Carothers Research Lab., Wilmington, Del.

May 11-13, 1960. Minneapolis, Minn. Radisson Hotel. 37th Annual AIC Meeting. The Twin City Chapter will be our host.

June, 1960. (Day to be announced.) **Minneapolis, Minn.** Meeting of Twin City Chapter. Award of student medals. For information: Dr. Joseph F. Abere, Minn. Mining & Mfg. Co., 2301 Hudson Rd., St. Paul 6, Minn.

May 11-12, 1961. Washington, D. C. Statler Hotel, 38th Annual AIC Meeting. The Washington Chapter will be our Host.

"As for serious chemistry, we have found that what is 'serious' for chemist No. 1 is way over the head of chemist No. 2 and nothing but baby talk for chemist No. 3."

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Creative Enterprise Through Ever-Expanding Research

(The U.S. Stoneware Company dedicated its new Chamberlain Laboratories at Stowe, Ohio, September 29, 1959, as a feature of its centennial celebration. The three speakers at the dedicatory ceremonies revealed some factors of successful chemical enterprise which are of interest to every medium sized or small chemical business that seeks success in this "era of Big business." Pertinent excerpts from these talks are given below.)

The Importance of Human Factors

Dr. Walter J. Murphy, Hon. AIC

Editorial Director, ACS Applied Publications, Washington, D. C.

THAT a company can survive and prosper for a century in our competitive enterprise system is, in itself, quite a feat. If one delves into each individual situation of this character, inevitably one will find that a tremendous amount of initiative, ability, imagination, hard work and a willingness to gamble are the principal ingredients which made 100 years of existence possible.

Just 100 years ago, a German immigrant, Frank J. Knapp, started a "backyard" enterprise in Akron to produce what is known as "common stoneware." This German immigrant, influenced by the Civil War, renamed the company the United States Stoneware Company, in the year 1865.

Today in this country, there seems to be a rather common feeling that for a company to grow and prosper it must be of huge proportions. Said somewhat differently, many of us are inclined to think of this era as the era of big business. Large companies merge to become huge combines in order to remain competitive. In the chemical and chemical process fields alone, I would not find it difficult to list hundreds of what were well-known names a few decades ago and which, today, are totally forgotten.

Therefore, it is most interesting, it is most instructive, and indeed, most convincing to be able to point to the U. S. Stoneware Company and to note its vigor on its 100th anniversary. Certainly it is not one of the giants of the U. S. industrial complex . . . It is, however, within its sphere of activity a highly respected supplier of a wide variety of products essential to a great many manufacturing operations.

Here then is a lesson to the American public, but more particularly to those youths in our country who are looking more for opportunity than guaranteed security. Here is an example for thousands of small and middle-sized companies proving that it is not necessary to sell out or to merge in order to remain competitive and prosperous.

At times I am appalled when I talk with young graduates from our schools of science and technology. A

substantial number of those interested in working for industry will frankly state that their choice is narrowed to four or five companies because they feel that by becoming an employee of one of them, a sort of college-to-the-grave security has been guaranteed. What a dull experience, what an unexciting life these young men are committing themselves to if this is the chief or only reason for their choice!

Why has the U. S. Stoneware been successful over a period of 100 years? The building we dedicate symbolizes the reason. The predecessors of the present management were alert individuals, who studied changing conditions and needs of industry, and frequently anticipated changes before they became widely apparent. In every sense of the word, this is research . . .

When, for example, there were indications that the markets for common stoneware were declining, officials of the company turned to the manufacture of chemical stoneware. This proved to be a momentous decision, for within a matter of a few years, the world plunged into World War I and the company was called upon to create and build a wide variety of corrosion-resistant products for the greatly expanding American chemical industry.

In 1907, the men at the helm were farsighted and courageous enough to move into a brand new field. With this same spirit, the U. S. Stoneware in the post-World War II period did move into the production of many materials other than ceramics. These include the development of special new rubber compounds, plastics, paints, adhesives, metals, and alloys. The research facilities we dedicate will assure the addition of still other products of practical application in industry . . .

It is pertinent . . . to ask: What has brought about the outstanding success of this company when so many others, with what seemed to be equal opportunities, have passed out of existence. The answer is the human factors involved. No new ideas, no new products will come out of the walls of this magnificent research center. They will come from the minds of the people who populate these facilities.

The fantastic expansion of this company into many varied fields is due in large measure to the team of J. M. W. Chamberlain, its president, and Howard Farkas, F.A.I.C., its vice president. Howard has been a keen observer of changing industrial conditions and demands for new and better products used in manufacture . . . They are an outstanding team of highly successful executives . . . able to attract highly competent associates.

These, then are the basic ingredients for the continued success of the free enterprise system . . .

One Hundred Years of Research

Dr. Foster Dee Snell, Hon. AIC
President, Foster D. Snell, Inc., 29 West 15th St., New York 11, N. Y.

. . . We live in an era where research is essential to every company. When small enough they have it done only by contract, as U. S. Stoneware did many years ago. As they get larger they have a small laboratory and as they grow, so does the laboratory . . . As the laboratory grows, so does the company, expresses it better! . . .

In every company, the expenditures for research are a necessary element. They provide, first, insurance against obsolescence, against competitors taking the lead. Then they provide new products, new processes, for the continuing growth of the company.

Every properly expended research dollar can be expected to return as $10.00 within ten years . . .

Growth Through Research

Dr. Paul Bachman
Vice President and Director of Research, The Koppers Co., Inc., Pittsburgh 19, Pa.

The U. S. Stoneware Company might well be termed an excellent example of "Growth Through Research." This is all the more refreshing when it is carried out, as this company has, without crying for direction or assistance from Washington bureaucrats who wish, or advocate, a super-duper research agency for the smaller company or the common man. For the creative man is not common. He is uncommon. And his presence in an organization fundamentally has nothing to do with its size.

Somewhere in the highest echelon there are men of positive action who live in that glorious state of creative research which evolves our challenges of the future. These executive men are rare, and they may well be men with non-scientific backgrounds. They nurture, or cause to be nurtured by others, such as their technical leaders, those having the gift of original thinking . . .

Applications will be accepted through Dec. 22, 1959, by the National Science Foundation for postdoctoral fellowships to be awarded in March 1960. Application materials may be obtained from the Fellowship Office, National Academy of Sciences-National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C.

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Color	light pink
Density—loose weight—lb/cu ft	24
Specific Gravity—true	2.15
Absorption—% by weight, water	90
Moisture—% by weight, maximum	1.0
Surface Area—sq. m/gm, average	3-5
Adsorption	negligible

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Academic Chemistry in the United States Between 1895 and 1920

Dr. Jack P. Montgomery, Hon. AIC
Emeritus Professor of Chemistry, University of Alabama, Tuscaloosa, Ala.

(Presented when the author received Honorary AIC Membership at a meeting of the Alabama Chapter, held at the Stafford Hotel, Tuscaloosa, Ala., September 26, 1959.)

SOME sixty years ago, physics and chemistry had a mere speaking acquaintance with each other. In fact, physics was often taught under the title of natural philosophy, as ethics and logic were under the title of moral philosophy. (This does not imply, necessarily, that modern philosophy is neither natural nor moral!) Physics was concerned with energy; chemistry with matter. Both seemed quite satisfied with an occasional reference each to the other. In physics we had the Law of the Conservation of Energy and in Chemistry the Law of the Conservation of Matter. No one saw any reason why the twain should ever meet or that either should be called upon to reinforce the other. It is true that the chemist talked about chemical energy and related it, sometimes quantitatively, to various kinds of energy recognized by the physicist.

In those days, the chemist, with no objections from the physicist, defined an element as a kind of matter made up solely of indivisible atoms, with the further provision that every atom of a given element was exactly like every other atom of that element and that the only way an atom could possibly change or show any activity was by combining with other different kinds of atoms to form molecules, the "little bodies" making up the mass of compounds. "Giant molecules" were not yet within our ken.

At that time, both chemistry and physics had reached a somewhat static condition, after about 100 years of vigorous development, characterized by some notable triumphs following great controversies. It was the general opinion that enough natural laws had already been established and that there were not likely to be any further helpful hypotheses to be promulgated. In chemistry, students were well grounded in what was then generally accepted as an already complete area. Even the superior teachers could not inspire much of a forward look, except the hope that known principles might perhaps be extended in their applications to somewhat wider horizons.

It is interesting to note that about the time this idea of completeness was shaping up, important discoveries were being made and theories formulated, which were destined to shatter

thoroughly this complacency. The impact of these made the task of the teacher unusually involved, since he had to adjust not only himself to this new and rapidly developing philosophy, but bring his students, as well, up to date. Important as it was, even the overthrow of the old Phlogiston Theory was not nearly so revolutionary as the discovery of electrons, X-rays, radium and its spontaneous disintegration, the creation of new elements, and theories of atomic structure with entirely new ideas as to valence.

The chemistry teachers of that wonder working period were the unsung heroes, the frequently unrewarded leaders, who were able to bring us through what might well have been a morass of uncertainty. It is to the glory of their successors that the ideal established by these patriarchs has been so well maintained, as we recall the many accomplishments in academic chemistry in the past 40 years.

Those who are old enough to remember their own contacts and others who have it in mind from their studies will agree that the chemistry teachers of this period, 1895-1920, thoroughly met the challenge which they had in that time of rapidly developing and momentous changes. The burden upon the teacher of a living science in attempting to keep his students well abreast of the times is always great. Naturally, there must be a time lag between the occurrence of an event and the recognition of that occurrence by the student, if the teacher allows him to depend solely upon the text book. With a somnolent science rapidly awakening to new life and vigorous growth, the inspiring teacher became not only an expounder of new truths but in many cases even a prophet of greater things to come. All praise to our teachers of old who not only set our feet firmly upon the solid foundations but inspired us to reach up with a sort of longing faith toward the heights of the superstructure not yet attained!

Since few of our American universities, about the turn of the Century, had been equipped to offer courses leading to the doctorate, most of our chemistry teachers had had some training abroad, particularly in Germany. There they had not only benefitted by their association with eminent masters, but they brought home, and established, for a time at least, the German system. In their graduate work, they had been closely associated with their teachers. When they, in turn, became teachers, it was natural for them to have a dual purpose; not only to teach but, by close personal contacts as mature friends of their students, to have a large part in the creation of worthy chemists to carry on the profession in loyalty and truth. These teachers had the faith to direct many who afterwards became thorough chemists with love for

and zeal in their profession, imbued with a sense of their responsibility in not only advancing in their chosen field but in creating for it a further dignity based upon stability of character. It must have been one of those teachers with an understanding heart who, when one of his colleagues was bewailing the ineptitudes of students, said, "In judging these fellows let us recall our own student days and remember that, after all, they are human beings, just like we used to be!"

Although highly specialized, their scholarship was broad. Most had decided views as to social practices, politics, and religion, or, in some cases, the uselessness of what they regarded as religious pretenses. Yet for the most part they were liberal and open-minded where science was involved. They realized that a mind closed by ill-founded convictions was a bar to progress and that the revelation of truth frequently comes through doubt and even disturbing questioning of what seems to be fundamental. However, some rather misread, "Be not the first by whom the new is tried, nor yet the last to lay the old aside," and this resulted in some rare old quarrels and misunderstandings, which often led ultimately to better understandings and uniformities.

The teaching of chemistry has had the tendency to be an art rather than a science in itself. This was particularly true some sixty years ago, though the present situation may be debatable. Some of us look back with a feeling akin to nostalgia to the time when the teacher of elementary chemistry was quite a showman. In few institutions was there laboratory work in the first year. Instead there were lecture table demonstrations. Even in the institutions providing laboratory work in the first year the lecture table demonstrations were not omitted. Scarcely a freshman had had any previous contact with chemistry, but fortunately for him, the best and most experienced teachers were assigned to the beginners. Such teachers often displayed great artistry in their carefully planned and well executed demonstrations, many of which were highly spectacular. In these days when the capacity for wonder seems lost to many, it may be difficult to realize the effect upon these students in awakening their interest and understanding.

Our younger friends may be amazed to learn that chemistry was relatively uncomplicated during the fading years of the previous Century, although this situation was shortly destined for drastic changes. Definitions were direct and in most cases appeared reasonable and logical even to the student mind. Hypotheses were presented as possible explanations of well-known facts, but clearly stated as inferior to laws, which in turn were merely statements of constant behaviors in the realm of recorded observations.

During the last half of the 19th Century, many notable workers through research and sound reasoning had brought to chemistry such important contributions that to us in the 1890's, there were few doubts or uncertainties. Although a few of these notables, including the great Ostwald, did not concur, the atomic theory in its then simple form was so well accepted that to call it merely an hypothesis was almost infidelity. From a maze of controversy and doubt in a meeting held in 1860, Cannizzaro had become the leader. It was through his thinking that many clarifications resulted. From these came the full establishment of Avogadro's hypothesis, the foundations of Lother Meyer's part in giving us the periodic table, and more solid ideas as to valence.

The clearing up of uncertainties as to Avogadro's hypothesis involved to some extent a better understanding as to the relationships between the atoms and molecules of the gases. Although it was assumed that the explanation of valence might finally involve electrical forces, valence was regarded merely as a definite property of the atom under the conditions existing at the time of its combination with other atoms. Although the term "electron" was beginning to be used, the terms "positive" and "negative" as applied to the elements meant little more than if a binary compound was stable, then it must be made up of a highly "positive" and a highly "negative" atom. Further, it was accepted that elements which with oxygen and hydrogen formed bases were "positive," and those forming acids with hydrogen and oxygen were "negative." In fact, the periodic tables found their chief use as a sort of reference chart for the subject in general chemistry and as a partial table of valence relations.

Usually in the text book discussions of the periodic table, due reference was made to Doeberiner's Triads and to the atomic numbers of Newlands, which differed in notation and significance from the later atomic numbers of Mosely. There were then many unfilled spaces in the periodic table, though some believed that new elements would be discovered to fill the gaps. There was no planned or conscious provision for what later became Group O, and isotopes were undreamed of.

In text books on elementary chemistry we had two tables of atomic weights, or rather a table with two columns, with one set of weights on the basis of hydrogen as 1; the other on the basis of oxygen as 16. In our chemical arithmetic, students were allowed, even encouraged, to use the nearer whole number or to round the atomic weight off at a whole number and a half (chlorine — 35.5). In Ira Remsen's *Introduction to the Study of Chemistry*, (4th Ed. 1895), 43 atomic weights are given as whole

numbers including hydrogen as 1 and oxygen as 16. In *Syllabus on General Chemistry,* by J. W. Mallet, published locally in 1901 for use of his students at the University of Virginia, atomic weights are given on the basis of hydrogen as 1 and oxygen as 15.88. In his table of approximate atomic weights only 25 whole numbers are given. This atomic weight table in Mallet's *Syllabus* seems to have been the first in any text for elementary students to include helium, argon, and the other members of Group O. Even Polonium and Radium are listed but without atomic weights. Since this book was printed locally there was not the usual time lag in publication. Here is a striking example of the challenge to teachers of that period and how efficiently they met the challenge. We should recall with appreciation and gratitude the noble company of other teachers who brought to their students the results of discoveries of the period long before any widely used text book could include them.

After the course in elementary chemistry the scene rapidly changed for the students. Except for the laws relating to gas volumes, some very elementary notions of electrical effects, and a few relations of thermal phenomena, the student had little contact with physical chemistry or exact measurements. He was destined to be amazed with the intricate items of analytical chemistry. Since only a few of the common compounds were in his ken, some confusion in organic chemistry occurred for a time, until he could appreciate the advantages of what is probably the most wonderfully worked out system of coordinations and relationships to be found in any philosophy . . .

For most chemistry students of that time, the subsequent program consisted of a rigorous course in qualitative analysis, often including determinative mineralogy with some blow pipe techniques and flame tests with use of the spectroscope, followed by quantitative analysis which, for the times, was quite complete. Finally there was exposure to organic chemistry in lectures and laboratory; the laboratory part being the simpler organic preparations, and some elementary physical chemistry. It is remarkable that many leading chemists then regarded the organic chemist as a sort of artisan and organic laboratory work as "cook book chemistry." For some reason the prior contributions of organic chemists to general chemistry were overlooked and there were few, even among organic chemists, who saw any great prospect of organic chemistry and inorganic chemistry reinforcing and building up each other in a sort of symbiosis.

With our present dependable, abundant supplies, it may be a surprise to learn that then a great handicap to laboratory work was the frequent scarcity of adequate glass-

ware and reagents. "C. P." on a label was optimistically hoped to mean at least "Comparatively Pure." Though there were a number of supply houses, porcelain ware, glassware, including thermometers and stirring rods, filter paper and nearly all except "heavy" chemicals had to be imported, usually from Germany. This meant that orders had to be in some months in advance to insure delivery at an expected date, but even then there were omissions or delays.

In analytical chemistry, litmus, cochineal and phenol phthalein were the chief indicators upon which we depended. It was obvious that the "end points" were somewhat different but *pH* values had not yet come into use. Thus the analyst had to establish his own "end point" by color observations alone. One device used to check the color of litmus at the supposed neutral point was to put equal volumes of a litmus solution into two cylinders of equal diameter, make the contents of one cylinder distinctly acid and the other basic; then hold the cylinders together, one behind the other, and observe the result of the mixed colors when light passed through them.

Dualistic formulas were still in effect. For example, in water and soil analyses, except in the case of chlorine, metals and non metals were reported as oxides. By a highly arbitrary scheme involving simple chemical arithmetic certain metallic oxides were "given" to specific non metallic oxides and to chlorine and thus the salts thought to be present were finally reported. Oxidation and reduction reactions were "explained" as in the following example:

$$10\ FeSO_4 + 2KMnO_4 + 8H_2SO_4 = 5\ Fe_2(SO_4)_3 + 2MnSO_4 + K_2SO_4 + 8H_2O\ .$$

Here we may regard the two molecules of potassium permanganate as made up of 1 molecule of K_2O, 2 molecules of MnO and 5 "extra" atoms of oxygen. In the reaction these metallic oxides unite with SO_3 to form one molecule of K_2SO_4 and 2 molecules of $MnSO_4$, thus freeing the the 5 atoms of oxygen to oxidize the 10 atoms of iron from ferrous to ferric. Some of us oldsters may regard this explanation as quite satisfactory, although it may come as a shock to those more recently trained!

Admittedly, academic organic chemistry about 1900 was a difficult subject for many students in spite of its already thorough organization. When he looked at what seemed a multitude of formulas with symbols of elements connected by lines, it was perhaps natural for the student to regard it as "flat, stale and unprofitable." Here and there in the text books there were intimations of some arrangements of the atoms in three dimensions, but even in the discussion of Baeyer's strain theory, which was based upon the valence bond angles suggested by the tetrahedral carbon of Van't Hoff,

the formulas and diagrams hardly suggested anything but the two dimensions of the surface on which they were printed. As a matter of fact, probably due to the derisive criticisms of Kolbe, the ideas of Van't Hoff were still somewhat questioned. Incidentally, one teacher carefully constructed tetrahedrons of card board with different colors at the four angles to represent four different groups combined with the central carbon to show the object and image relationship, but one of his colleagues playfully wrote on the surface of a tetrahedron, "For the carbon atom look inside."

Students naturally fell into the error of assuming that the carbon atoms in a compound were coplanar without even a slight "puckering." Then, though Kekule's hexagon formula for benzene was accepted and acclaimed, there was disagreement as to the disposition of the fourth bond for each carbon; whether to use alternate double bonds; have the extra bonds extend across the ring to an opposite carbon, or merely show the 6 "extra" valences as directed toward the center, as in the remembered centric formula. Thus, organic chemistry, academically at least, was caught in the complacency of the period and yet to a less degree than other divisions of the science.

Important among the causes leading to the upsetting of the complacency of academic chemistry were the experiments of Crookes and others in the conduction of high voltage electric currents by gases at low pressures; the dissociation theory of Arrhenius, and Nernst's theory of solution pressure. These somewhat laid the foundation for the use of the term electron and the wider use of the term ion. However, at the beginning of these forerunners of the great explosion of atomic philosophy, the atomic theory did not include reference to electrons, since the doctrine of the indestructibility of atoms was still in effect. It seems reasonable to infer that even Arrhenius regarded ions merely as electrically charged atoms or radicals while putting great importance upon dissociation.

Through the researches of Crookes the cathode rays were discovered and were later identified with electrons. This progressively led to the discovery of X-rays, the work of Becquerel, the inspiration of the Curies, the discovery of polonium and radium, and to crown it all, the discovery that here we have an element the atoms of which are capable of spontaneous disintegration, even forming atoms of other elements.

With the theory of the indestructibility of the atom discredited and the facts of dissociation and transmutation established, though in limited areas, academic chemistry was almost overwhelmed with a series of rapidly developing sequences during the next twenty years, which presented about

the greatest challenge any teachers ever had! One great problem was for the teacher to keep himself informed; another to clarify the situation for students whose text books had to lag far behind. It was not until about 1918 that text books in general chemistry began to include fairly clear accounts of isotopes, atomic numbers, atomic disintegration, the electronic conception of valence, the newer ideas as to the periodic table and its renewed significance, and the Lewis-Langmuir Theory. (The Bohr Theory was occasionally mentioned with awe!) To those teachers who sought to keep their students abreast of this rapidly developing scene it was a task to reconcile what the text said about the periodic table, indestructible and identical atoms, valence, oxidation and reduction, ions as atoms or radicals carrying an electric charge, when compared with the newer wall charts of the periodic table, with its atomic numbers and new groups of elements, including isotopes, disintegrating atoms, transfer and sharing of electrons, an "explanation" of valence and new ideas as to ions.

Although there were some controversial debates tending to add confusion to an already complicated situation, academic chemistry came through quite commendably in the first 20 years of this Century.

During this period, the new philosophy did not have a uniform impact. Many accepted it wholeheartedly and with enthusiasm; others doubted that it was important to the industrial progress of chemistry; others used only those parts which seem to suit their purposes. Since 1815, there had been a persistent group favoring Prout's Hypothesis that various combinations of hydrogen make up the mass of the atoms of all the other elements. These "Proutians" had somewhat gloried in the idea of chemical triads and the Law of Octaves as reliable evidences of the genetic relationships of all the atoms and were among the first to accept the Periodic Table, though with reservations as to the accuracy of the recorded atomic weights. They looked forward to the time when atomic weight determinations would result in whole numbers, claiming that in the various revisions of atomic weights, "These investigators become lost in the mazes of a spurious accuracy."

When at last Mosely with his atomic numbers, Bohr with his atomic structure theory, and Lewis and Langmuir with their popular theory of atomic structure and chemical bonds brought us around again, not to the theory but to the certainty of genetic relationships of atoms, a relationship far more wonderful and awe inspiring than Prout himself had imagined, the "Proutians" really had their day.

The solution pressure theory of

Nerst came prominently into the picture and received new life, at least in the minds of chemists, who saw in it a satisfactory explanation of the electrochemical series. Strange to say, physicists did not so readily accept it. The old analogy of an electric current flowing from positive to negative, as water flows from higher to lower, is even today employed by physicists, while the chemist readily accepts the idea that in battery reactions we have, instead of a current from positive to negative, a procession of electrons from negative to positive. The idea of oxidation and reduction reactions at the electrodes was readily extended by chemists into the realm of oxidation and reduction reactions in general by an application of electronic transfer theories. There were some chemists who ridiculed the idea of electronic oxidation and reduction. They said that it was almost a renewal of the Phlogiston Theory and that if some of those old Phlogistonists could come back, all they would have to do would be to say "electron" instead of "phlogiston" and their hitherto discredited philosophy would be in good order again.

There was also a long continuing feud concerning the theory of dissociation. The theory fit in beautifully with the behavior of weak electrolytes, but strong electrolytes showed many anomalies. Nevertheless, some enthusiastic proponents sought to apply it to all aqueous solutions of all electrolytes, even attempting to reconcile the behavior of the strong electrolytes to the Law of Mass Action. Relying upon the freezing point methods of determining molecular weights, the student was required to determine the "degree of dissociation" of, say, sodium chloride and to write his equation,

$$NaCl \rightleftharpoons Na^{+} + Cl^{-}$$

although it had not yet been surely determined what the plus and minus signs really meant. In analytical chemistry this idea was carried to such extremes, that though strong electrolytes were involved, the mechanism of a precipitation was indicated as in this frequently used example:

$$\begin{array}{ccccc} NaCl & \rightleftharpoons & Na^{+} & + & Cl^{-} \\ & & + & & + \\ AgNO_3 & \rightleftharpoons & NO_3^{-} & + & Ag^{+} \\ & & \uparrow\downarrow & & \downarrow \\ & & NaNO_3 & & AgCl\ . \end{array}$$

A minority group led by Kahlenberg of Wisconsin stoutly resisted these assumptions but Stieglitz and many others were strong proponents. As a valuable result of this feud, the solubility product doctrine of Nernst came into its own.

Many other examples of both accomplishments in the resolution of complexities and of great advancements following mighty controversies could be cited, but it is hoped that in some measure you have been re-

minded of the great tasks our teachers have been called upon to accomplish with patient zeal and an inspired fidelity. With the material they had to work on their motto necessarily was *"Gutta cavat lapidem non vi sed saepe cadendo,"* and still should be for the many who have not failed to be mature friends to their students and faithful to their calling.

Although their contributions to chemistry in general may not have been impressive, their part in training and inspiring chemists who have greatly advanced the profession entitles them to boast, without immodesty, that, in the words of one great teacher, "The years should not have been spent otherwise."

So with love and grateful appreciation,

"Let us now praise famous men. The Lord hath wrought great glory by them, wise and eloquent in their instructions . . . Their bodies are buried in peace, but their name liveth forevermore."

Jack Percival Montgomery

Dr. Emmett B. Carmichael, F.A.I.C.

Department of Biochemistry, University of Alabama Medical Center, Birmingham 5, Alabama

(Presented when Dr. Montgomery received Honorary AIC Membership at a meeting of the Alabama AIC Chapter, September 26, 1959, at Tuscaloosa, Alabama)

DR. Jack Percival Montgomery was born on July 18, 1877, at Columbus, Mississippi, a town which has furnished this country with two other well known chemists: Dr. Charles Baskerville, director of the Chemical Laboratory of the College of the City of New York, 1904-1922, and Dr. Harrison Hale, professor of chemistry and chairman of the department, University of Arkansas, 1918-1945.

Dr. Montgomery was the son of David Hugh and Annie Stinson Montgomery. Much of his early education was conducted by his mother, but he did attend public school and the Franklin Academy in Columbus. Then his family moved to Birmingham and he attended the Preparatory Department of Howard College for two years before entering that institution as a freshman. The general depression of the early '90's caused his withdrawal from Howard in the middle of the sophomore year.

After three years work in grocery stores, Dr. Montgomery entered Southwestern Presbyterian University, Clarksville, Tennessee (now located at Memphis) in 1896. He took a heavy schedule and had almost enough hours of credit for the A.B. degree in 1898. However, he continued with a heavy schedule and was awarded both the A.B. and

M.A. degrees in 1899, when he was only twenty-two years old. He was the valedictorian of his class.

Dr. Montgomery entered the University of Virginia in the Fall of 1899 as a candidate for the Ph.D. degree, under Dr. John William Mallet. After spending the next two regular sessions and two summer sessions here, he ran out of funds, so he came back to Birmingham where he taught at the Birmingham High School during 1901-1902. He indicated that he did not have a "Chair" but a sort of "Settee" of chemistry, physics, physical geography and botany. He had not even taken a course in the last subject.

His finances recouped, he went back to Charlotteville for the summer of 1902. Much to his surprise, Dr. Mallet not only recommended him for a position at Mississippi Agricultural and Mechanical College (now Mississippi State University), but urged his acceptance with the agreement that he finish his dissertation *in absentia* and return for his final examinations in June 1903. Everything went according to plans and the degree was conferred in June 1903.

Dr. Montgomery returned to Mississippi College where he held the rank of associate professor of chemistry and served as assistant state chemist during the summers. During two summers, he was transferred to the Textile School where he taught the chemistry of dyes and dyeing. It seems that his interest in organic chemistry stemmed from his experience with dyes. He obtained permission to spend two summers at the University of Chicago where he took advanced courses in physical chemistry and a course in bacteriology.

In the fall of 1911, Dr. Montgomery was called to the University of Alabama as an *adjunct* professor of chemistry. In 1918, he was elevated to the rank of professor of organic chemistry, a title he held for over thirty years. Dr. Montgomery served as professor of chemistry at the University of Virginia during the summer sessions of 1926 and 1927.

In 1918, Dr. Montgomery was named chairman of the newly-created Premedical Committee, a position which he held until his retirement. Dr. Montgomery published a *Laboratory Manual in General Chemistry* in 1918 and the second edition appeared in 1925. He wrote a *Laboratory Manual in Organic Chemistry* in 1927. He was an assistant editor of the *Outline of Organic Chemistry* and an associate editor of *Fundamental Organic Chemistry*.

The fact that he was a popular professor is attested to by the fact that he directed many masters' theses. He has often pointed with pride to a respectable number of chemists who studied with him and also to a multitude of physicians, to say nothing of the by-products such as teachers, ministers, two college presidents, two

university presidents, attorneys, three United States senators, and one undertaker.

Dr. Montgomery was a charter member of THE AMERICAN INSTITUTE OF CHEMISTS, having joined as a Fellow in 1923. He has been identified with the American Chemical Society in many capacities: as associate editor of the *Journal of Chemical Education* and as chairman of the Committee on Chemical Education. He was active in organizing the Alabama Section of the American Chemical Society, of which he was president in 1917 and 1918 . . . Having been a member of The Chemical Society (London) for fifty years, he was made an *ex officio* life member in 1954.

He is especially known for his continued interest in student affairs. His was the guiding hand in the organization of the mother chapter of the premedical society, Alpha Epsilon Delta, and he was honored by being elected honorary grand president when the organization became national in scope in 1930. He served as president of the University of Alabama Chapter of Phi Beta Kappa during the session 1935-1936. He not only served as national president of the chemical fraternity, Gamma Sigma Epsilon, but also was the grand recorder and editor of the official journal, *The Ray*. Dr. Montgomery was grand secretary of the general scientific society, Chi Beta Phi, and was editor of *The Chi Beta Phi Record*. He was faculty advisor to the Gamma Alpha Chapter of Pi Kappa Alpha fraternity for twenty-five years and the Omega Delta Kappa Chapter for twelve years. He also found time to be identified with Y.M.C.A. activities both at the University of Alabama and in the city of Tuscaloosa.

He entered into many other civic activities. He was a charter member of the Tuscaloosa Kiwanis Club and served as its president. He was an active member of the Knights of Pythias, serving as chancellor commander of the Tuscaloosa Lodge, and a member of the Grand Lodge of Alabama. For three years he was superintendent of the Sunday School of the First Baptist Church . . . For years, he has been a member of the Tuscaloosa Little Theatre and often appeared in the casts. His acting career continues as an honorary member of the University Theatre, which produces four major plays each school year. He has had parts in such plays as Blythe Spirit, the Crucible, Anastasia, Ring Around the Moon, and even Romeo and Juliet (not Romeo's part but that of Juliet's grandfather!).

In 1917, Dr. Montgomery married Adele Harrison on his birthday July 18. The Montgomery's had one child, Belle. She and her husband, Dr. John M. Chenault, have presented Dr. Montgomery with four grandchildren.

Although Dr. Montgomery has

been professor emeritus of organic chemistry since 1948, he has continued his interest in chemistry. He was extended the courtesy of an office and laboratory in the Chemistry Building, now Lloyd Hall (named for the late Dr. Stewart J. Lloyd, F.A.I.C.), where he has carried on a consulting research practice. He lectures occasionally when some of the active staff members are sick or are attending out of town meetings. He is called upon to speak at local banquets and continues to be in demand as a toastmaster.

When the Pi Kappa Alpha Chapter presented Dr. Montgomery's portrait to the University, he was pleased with one item on the attached bronze plate, "Student Friend." To his many former students, colleagues and friends, he is known by the affectionate name of "Dr. Jack."

(*Note*: See front cover for the portrait of "Dr. Jack.")

Tribute from the Chemistry Faculty

Dr. Robert D. Brown, F.A.I.C.
Dean, School of Chemistry, University of Alabama, Tuscaloosa, Alabama

I HAVE been chosen to represent the active chemistry faculty of the University of Alabama, because I have known Dr. Jack P. Montgomery longer than any else in that group. At the very sophisticated age of a college student, I was immediately struck by Dr. Jack's regal bearing, his hearty voice, and his contagious laugh. I noted, too, the bustling activity in his classroom and laboratory. These were casual, first impressions.

On better acquaintance I learned of his enormous interest in people, students, faculty colleagues and fellow townsmen alike; of his capacity to participate in and direct many activities, capping his prowess in chemistry much like the frosting on a cake. Thus, one who came to know him well found him to be: Scientist, teacher, thespian, philosopher, and friend.

Tribute from Former Students

John M. Jernigan, F.A.I.C.
President, Southern Pine Chemicals, 2503 Greensboro Ave., Tuscaloosa, Ala.

WE are blessed on rare occasions to contact those with the talent needed to organize a mass of fact and theory. When the organizer can then present the principles in an interesting, attractive manner, we have a science teacher.

When such a science teacher is a man in all the finer sense of the word; when he faces the problems of

life with a smile, and a good story appropriate to every occasion; when his outlook and personality says, "Don't worry. Try this and work hard," we then have a Teacher-Leader. And we are blessed.

The many hundreds of Dr. Jack P. Montgomery's students unite in giving just and well-earned recognition to "Dr. Jack." His blend of professional competence, personal attractiveness, manly kindness, and understanding heart is rare in any age.

To you, Dr. Jack, we are grateful for some specifics. You reduced the fundamentals of organic chemistry to a refined degree; you related types of organic reactions thoroughly, while pointing out exceptions and how to deal with them. In fact, you made organic chemistry so simple and attractive that we usually forgot the answers by examination time!

However, as the years go by, as we need guidance with more and more complex natural and synthetic organic chemical reactions, we find, to an amazing degree, that we draw almost unconsciously on the fundamentals you taught us.

Thank you for teaching us!

Presentation to a Beloved Teacher

DR. Jack P. Montgomery, emeritus professor of chemistry, University of Alabama, a charter member of the AIC, was presented with Honorary AIC Membership at a dinner meeting of the Alabama AIC Chapter, September 26, 1959, at the Stafford Hotel, Tuscaloosa, Alabama.

Martin B. Williams of the Redstone Arsenal, Huntsville, Ala., and chairman of the Chapter, presided. He, as were many of those present, is a former student of "Dr. Jack." Referring to this popular professor, he commented, "Someone once said that students remember the character and personality of a great teacher long after they have forgotten all the specific facts that he hoped he had taught them!"

Dr. Emmett B. Carmichael, head, Biochemistry Department, Medical School, University of Alabama, Birmingham, spoke on the career of the recipient. Dr. Robert D. Brown, dean, School of Chemistry, University of Alabama, spoke for Dr. Montgomery's colleagues. John M. Jernigan, president, Southern Pine Chemicals, Tuscaloosa, offered a tribute from Dr. Montgomery's many devoted students.

Dr. Ray P. Dinsmore, vice president, Goodyear Tire & Rubber Co., Akron, Ohio, and former AIC president, presented the Certificate of Honorary Membership, saying that "Dr. Montgomery typifies the truly professional individual that the AIC seeks to develop."

Dr. Montgomery responded with

(Tuscaloosa News Staff Photo)

Dr. Montgomery, Dr. Dinsmore and Dr. Brown in pre-meeting discussion of a plastic pen.

an address on "Academic Chemistry in the U. S. from 1895 to 1920," in appreciation of the teachers of that changing period in science who met their responsibilities so commendably. He preferred to regard this award to him as the desire of the AIC "to honor that great and devoted group of teachers we have had, choosing the present recipient to represent the others, thus honoring the many rather than merely the one."

The invocation and benediction were pronounced by Dr. George H. Lang, professor emeritus of philosophy, University of Alabama, Dr. Montgomery's college classmate as well as, later, his faculty colleague.

The citation on the Certificate of Honorary Membership reads:

To Dr. Jack Percival Montgomery

In recognition of his contributions to the education and training of young chemists and to the literature of organic chemistry as author and editor; his inspiring and sympathetic encouragement of his students, to whom he is affectionately known as "Dr. Jack"; his life-long service for others in his scientific, academic, fraternal, and religious affiliations.

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The National Science Foundation invites scientists and science teachers to submit proposals for the design of better laboratory equipment for use in the Nation's schools. Suggestions for preparing proposals may be obtained from the Course Content Improvement Sec., Div. of Scientific Personnel & Education, National Science Foundation, Washington 25, D. C.

The Atomic Energy Commission is accepting applications for AEC fellowships for the 1960-61 academic year, in the fields of nuclear science and engineering, health physics, and industrial hygiene. For information: Fellowship Office, University Relations Division, Oak Ridge Institute of Nuclear Studies, P.O. Box 117, Oak Ridge, Tenn.

The AMFlex Products Department of American Machine & Foundry Co., Springdale, Conn., recently introduced a new filtering material, "Fiberfilm," based on borosilicate glass fibers impregnated with Teflon, designed to resist acids, alkalis, and solvents, and to stand temperatures up to 500° F.

The Colgate-Palmolive Company, New York 22, N. Y., announces that it will establish a multi-million dollar center for basic and applied research adjacent to the Rutgers University Science Campus at New Brunswick, N. J.

Communications

Professional Status and Employment Procedure

To the Editor:

Recently it was brought to my attention that a large national firm advertised in a local area newspaper, for professional chemical engineers and chemists, and made arrangements for company representatives to meet these professional people in the office of an employment agency that specializes only in handling unskilled and skilled labor and tradesmen.

This is a case of drawing no line of distinction between professional scientists and labor. If the firm needed meeting quarters, it should have used the hotels in which the company representatives were staying, or facilities provided by the Engineers' Club rooms, or by the local Chamber of Commerce, but not select an ordinary employment bureau which handles unskilled and skilled labor.

We endeavor to educate the public to recognize us as professionals, but this objective can hardly be furthered by adopting the same tactics as prevail in seeking unskilled labor and tradesmen. The significant aspect of this is that the negotiations for employment are conducted by telephone girl operators and members of the employment office force, none of whom are chemists or chemical engineers, and who know nothing whatsoever about the chemical industry, nor the ethical procedures of approach which should be adopted by professionals seeking such connections. The personnel directors and members of chemical enterprises, when contacted by ordinary employment bureaus offering scientists for employment, immediately lose regard and respect for professional applicants, and feel that they have lost their initiative.

This would indicate that if our AIC is to function in the broad sense to carry out its objectives, one of its most important services would be to assist and guide our members in the procurement of the proper types of affiliation in connection with the sale of their professional services.

The AIC might properly guide and advise the local chapters toward the formation of a local employment committee which would keep lists of applicants and the names of enterprises seeking the services of chemists and chemical engineers. The local Chapters should inform both members and non-members that one or more properly qualified members are available for conferences, so that unemployed chemists might be guided and advised as to the techniques and procedures in obtaining reemployment.

I am in no way condemning employment bureaus, but rather indicating that if we object to professional chemists resorting to ordinary employment bureaus, in the absence of

specialized agencies for professional people, we must offer an effective substitute for their use, if we are to maintain professional status and regard from the public.

In addition, local chapters could select properly qualified members to present short addresses before the graduating classes of our colleges and universities, to outline briefly the proper approach for employment with industrial, governmental, and educational institutions.

Perhaps the National AIC Council should form a committee for the development of a program to offer our Chapters; possibly a member could visit these chapters and present the subject matter to the local membership as a paper, or for a round table discussion.

—H. A. Levey, Hon. AIC
New Orleans, La.

"When Should I Change My Job"

To the Editor:

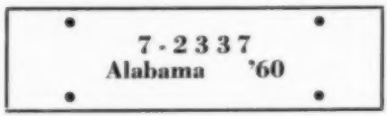
We have reviewed an abstract of an article entitled, "When Should I Change My Job?" (THE CHEMIST, September, 1959). This type of data is an important factor in maintaining a well-balanced personnel program. So that we may have the full benefit of your article, we would like (copies). . . .

—H. J. Deney
Buffalo, N. Y.

Strange Coincidence

To the Secretary:

This year, as last year (CHEMIST, December 1958), my new automobile license plate bears numbers of significance to the AIC:



The 7 is for the seven months until the next Annual Meeting; the 23 for the number of our present chapters; the 37 for the number of chapters we should have by our 37th Annual Meeting to be held in May 1960! (The place of the meeting is Minneapolis, Minn.)

—Martin B. Williams, F.A.I.C.
Chairman, Committee on New Chapters and Expansion

Reprinted

Dr. Murray Berdick, F.A.I.C., of Evans Research & Development Corp., New York, N. Y., informs us that "The Chemist and National Defense," by Maj. Gen. Marshall Stubbs, presented at our 36th Annual Meeting, has been reprinted in the *Armed Forces Chemical Journal*, July-August, 1959.

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Report of the Committee on New Chapters and Expansion

Plan of Action, 1959-60

In a challenging address to the Alabama Chapter this October, President Kuhn, speaking on "The Public's Image of the Chemist," pointed out some widespread popular misconceptions about the chemical profession, and in conclusion stated, "You can't legislate status. You earn status, and from performance comes recognition."

We can apply this reasoning to our own growth as an organization. We will not grow simply because we think we should, although specific goals are an aid to growth, but only because we work to that end. Recently, I came across two quotations which I consider to be apropos to the role of the AIC today, "Make no small plans!" and "Be bold, and mighty forces will come to your aid!"

The INSTITUTE's function as a catalyst has often been cited, but let us also apply another chemical principle, the Law of Mass Action. Just as the rate of a chemical reaction is proportional to the product of the concentrations of the reactants, so the effectiveness of the AIC is proportional to Total membership x Per capita zeal!

Here are some specific goals which we hope will be enthusiastically supported by every Fellow, Member, and Associate of the INSTITUTE:

"37 in 37": 37 Chapters by our 37th Annual Meeting, in Minneapolis, Minn., May 1960. Last year's expansion "breakthrough" increased Chapter total from 13 to 23. The addition of 14 more Chapters should be a "must" for this year.

"6000 in '60": Membership has been near 3000 for the past 5 years. Another "breakthrough" is needed to double membership.

"The 200 Club": To consist of each Fellow, Member, or Associate, who will try to obtain at least ten new members during the year. Getting new members is not difficult; enthusiasm for the AIC program is the main prerequisite. The 200 Club now has more than 80 members; we should have the additional 120 by December. One member, William D. Guthrie, has been responsible for 12 new members in 6 months. Volunteers for the 200 Club should contact Co-chairmen of the Membership Committee; Dr. Lawrence T. Eby, 1105 DeWitt Terrace, Linden, N. J., or Dr. John R. Bowman, Associate Dean of Engineering, The Technological Institute, Northwestern University, Evanston, Ill.

Chapters Approved in 1958-59 *and Scheduled to Begin Operations in the Near Future. Individuals to Contact re. Chapters' Activity and Plans*

1. **Southwest:** Dr. Robert D. Schwartz, Shell Development Co., P.O. Box 481, Houston, Texas.
2. **Tennessee:** Dr. Philip S. Baker, Oak Ridge National Lab., Oak Ridge, Tenn.
3. **Michigan:** Dr. John M. O'Neill, Patent Office, Detroit Arsenal, Centerline, Mich.
4. **Wisconsin:** Mr. James E. Henning, Bjorksten Research Labs., Inc., P.O. Box 265, Madison, Wis.

(Note: Of the other six chapters established last year, the Piedmont, Midwest, and Delaware Chapters will soon celebrate their first anniversaries, and the Florida, Beaver Falls, and Pittsburgh Chapters have recently begun active operation.)

Proposed New Chapters and Persons Working Toward Their Formation

1. **San Francisco:** Dr. Ludwig Rosenstein, 111 Sutter St., San Francisco 4, Calif.
2. **Connecticut:** Dr. Kurt S. Konigsbacher, 278 Pepper Ridge Road, Stamford, Conn.
3. **Western Massachusetts:** Dr. W. A. Lazier, Box 850, Williamstown, Mass.
4. **Kentucky & Southern Indiana:** Dr. S. C. Spalding, Jr., University of Louisville, Louisville, Ky.
5. **Virginia:** Mr. Charles R. Outterson, Albemarle Paper Mfg. Co., Richmond, Va. (A meeting was held recently with those in attendance enthusiastically in favor of formation of a local chapter. A formal petition is expected shortly.)

6. **North Carolina:** Dr. A. Edward A. Hudson, 4 Edgewood Apts., Goldsboro, N. C.
7. **South Carolina:** Dr. John A. Southern, Furman University, Greenville, S. C.
8. **State College,** Pennsylvania, area and 9, Wilkes-Barre & Scranton area. Dr. John J. Bohrer, International Resistance Co., 401 No. Broad St., Philadelphia 8, Pa., with help of local men to be chosen by Dr. Bohrer.
10. **Maine,** New Hampshire and Vermont: Mr. Lawrence Flett, Old Main St., New London, N. H.
11. **Mississippi & West Tennessee:** Brother Edward, Christian Brothers College, Memphis, Tenn.
12. **East Texas & N. W. Louisiana:** Dr. Pauline B. Mack, Texas Woman's University, Denton, Tex.
13. **Inland Empire** (E. Washington & N. Idaho): Dr. M. M. Renfrew, University of Idaho, Moscow, Idaho.
14. **Pacific Northwest:** Mr. Stanley W. Comer, Chemistry Department, University of Washington, Seattle, Wash. (Meeting held recently in Seattle, Wash. Those in attendance were enthusiastically in favor of formation of local chapter, and formal petition is expected soon.)
15. **Central & South Ohio:** Mr. Malvern J. Hiler, Commonwealth Engineering Co. of Ohio, 1771 Springfield St., Dayton 3, Ohio.
16. **Colorado & Utah:** Dr. Robert H. King, CW Division, Dugway Proving Ground, Dugway, Utah.
17. **St. Louis area:** Dr. John Eibert, Jr., Scientific Associates, Inc., 3755 Forest Park Ave., St. Louis 8, Missouri.
18. **Iowa**
19. **South Dakota and North Dakota**
20. **New Mexico & West Texas**
21. **Oklahoma & Arkansas**
22. **North Alabama**
23. **South Alabama & Northwest Florida**
24. **Arizona**
25. **Alaska**
26. **Hawaii**
27. **Puerto Rico**
28. **Montana:** Here we can really start from scratch, as we have no members in the state.
29. **Nevada:** Same situation as Montana!

Criteria for Selection of Proposed New Chapters

The 29 locations listed above are those suggested by members of the AIC who are willing to spend the time and effort necessary to get new chapters organized in their own area, or were selected by the chairman of this Committee as a result of study of our Geographical Directory (THE CHEMIST, May 1958). Suggestions for other possible sites will be welcomed. Those working toward the organization of new chapters will welcome support and expressions of interest from the AIC membership. We can have 37 chapters by next May (if chapters are established in only half of the sites listed), but it is not a job that can be done by this Committee alone; the cooperation of our entire membership is needed. Last year we established 10 chapters; let's do at least 40% better this year, making it a year of definite progress.

Let us unanimously and wholeheartedly support the leadership of President Kuhn and all of our national and chapter officers to help them make this the best year the AIC has ever had!

—Martin B. Williams, *Chairman*

The Chemical Division and the Ammonia Division of Armour & Co. have been combined to form the new Armour Industrial Chemical Co., with offices at 110 North Wacker Drive, Chicago 6, Ill.

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Microbiologist, B.S. or M.S., for care and propagation of cultures. Experience in industrial fermentation and practical control work. Location Metropolitan New York. Box 113, THE CHEMIST.

College graduate, sales experience, pleasant personality, with wide acquaintance among business and professional people, ambitious, for position as professional life underwriter. Men selected will receive adequate training, active assistance in getting started, salary commensurate with need plus commission, as well as liberal employee benefits. Location New York City. Box 115, THE CHEMIST.

Chemical Engineer

required by manufacturer of plastic coated fabrics. Must have wide experience in the plastic industry with expert knowledge of plastisol formulations and ability to supervise compounding room. Also must be fully experienced with and able to supervise reverse roll coater and 100 ft. fuseing oven. Initial salary $10,000 to $15,000, depending on experience. Location: Canada. Reply with full details to Box 707, THE CHEMIST.

For Your Library

Science and Education at the Crossroads

A View from the Laboratory. By Joseph William Still. Public Affairs Press, Washington, D. C. 1958. 140 *pp.* $3.75.

The strength of this appealing book resides in the positive measures the author proposes as practical ways for "achieving a peaceful world" (p. V). The problems have been recognized before; Dr. Still presents them concisely and in their mutual relationships. Greater participation of scientists in world affairs has been pleaded before. Dr. Still's main new contribution is the emphasis on biological aspects, based on his experience in the Mediterranean Theater of Operations Surgeon's Office. His proposals are concerned with three domains: Education, research, and foreign aid programs. He advocates a National Education Council to set minimum national standards for our schools and stop the "I-Q fanatics." He criticizes the project-grant system and over-centralization in "team" work. A "Science Personnel Record System" should help to find and sponsor the individual research man. "Health is of fundamental importance as an economic factor" (p. 102); therefore, he outlines "a program to export biology in all its forms" (p. 137).

Of Dr. Still's many specific proposals, a few will seem of doubtful practicality, like the "National Hall of Fame for scientists, educators and others who have made major contributions toward the advancement of knowledge and human welfare" (p. 53), or "a zone of peace . . . established in the underdeveloped areas . . . under a UN guarantee" (p. 133), but all these proposals should be the concern of every scientist. However, a great obstacle stands in the way. While the scientist may feel that he is obligated, he is too well equipped not to doubt that he is qualified to take an active part in public affairs. This has been recognized as a challenge in our INSTITUTE, and expressed in such articles in THE CHEMIST as those by Ray P. Dinsmore (Oct. 1956) or Wyatte F. De Loache (June 1958), to cite only two. Dr. Still's energy may activate the reader to accept the challenge.

—Dr. Eduard Farber, F.A.I.C.

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b. Finishing department: paint and lacquer sludges, thinners, solvents, etc.

c. Laboratory: metallic sodium, lachrymators, toxic materials, ethers, solvents, exotic chemicals, etc.

d. Plant: spoiled batches, by-product streams, etc.

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The Pasteur Fermentation Centennial 1857-1957

A Scientific Symposium. Charles Pfizer Co., Inc. New York. 6" x 9¼".

This attractive volume covers the proceedings of the research conference held in New York, Nov. 21, 1957, in which scientists from Cuba, Russia, Japan, France, Gt. Britain, and the U. S. participated. Sponsored by Pfizer, the conference paid tribute to Pasteur's original discovery, which made possible all subsequent contributions to antibiotic researches, and also included important papers by leaders in the biochemical field.

The proceedings began with an address by Prof. L. Pasteur Vallery-Radot, president, Pasteur Institute, and were concluded by a brief *envoi* by Excellency Pierre Alphand, Ambassador from France to the U. S., entitled "Science and Peace will Triumph." Lengthy discussions after each paper brought forth a wealth of interesting details and varied interpretations of the same findings. Every biological chemist, who can, should get a copy of this valuable book.

—Dr. F. A. Hessel, F.A.I.C.

Low Temperature Physics and Chemistry

Proceedings of the 5th International Conference. Edited by Joseph R. Dillinger. University of Wisconsin Press. 1958. 676 — *xxvi pp.* $6.00.

In any fast advancing field of science, the effective means to get up-to-date is to attend a conference of those pioneering in it, and listen. The next best way to come abreast of the times is to read the carefully edited proceedings of such a conference after those having part in it have incorporated ideas growing out of discussion. Sometimes the second method is better. Indeed, it seems so in this case, where the ideas of some 340 authors are embodied in 225 papers on many aspects of low temperature research. In addition to the 26 chapters in which the many diversified papers have been assembled, the book has what is rare, an adequate pair of indexes, author and subject. Seven chapters are devoted to techniques involving, and properties of, helium; 3 discuss instrumentation and techniques at low temperature; 5 are occupied with super-conduction and related matters; 4 to phenomena related to magnetism; 1 to nuclear orientation experiments, and the others to physical, mechanical and chemical properties as affected by extreme low temperature.

—D. H. Killeffer, F.A.I.C.

Biochemical Preparations

Vol. 4. *W. W. Westerfield, Editor-in-Chief.* 1955. 6" x 9¼". 108 *pp.* $4.25; *Vol.* 5. *D. Shemin, Editor-in-Chief.* 1957. 6" x 9¼". 115 *pp.* $4.75; *Vol.* 6. *C. S. Vestling, Editor-in-Chief.* 1958. 6" x 9¼". 105 *pp.* $5.25. *John Wiley & Sons, Inc.*

This useful series has become indispensable to the practical biochemist and chemist. The condensed methods are invaluable time savers since theoretical considerations are not included. The methods are written by experts and checked by others equally acquainted with the procedures. The 3 volumes cover the preparation of 60 different compounds, all of considerable biochemical importance. There is a satisfactory bibliography in each volume.

—Dr. Henry Tauber, F.A.I.C.

Chemical Books Abroad

DR. RUDOLPH SEIDEN, F.A.I.C.

Franckh'sche Verlagshandlung, Stuttgart-O: *Chemie Lexikon,* by H. Roempp; 4th ed.; DM 198.—This 2-volume (A-K; L-Z) encyclopedia of chemistry has been enlarged again; it now brings, in 2540 pages, 24,700 key words describing chemical substances and terms; also 700 biographical sketches; 18,000 addresses of supply firms (of value to manufacturers and dealers), and 15,600 literature references (of special interest to scientists). Of newer products discussed may be mentioned, Aerosol bomb, Achromycin, Bacitracin, Bayer E39, Einsteinium, Hexachlorophen, Khellin, Meprobamate, Reserpin, Stresshormone, TEM, and Tranquilizer. Style, type faces and illustrations are clear. The material is presented in precise form, making this a reference work unparalleled in usefulness; it is worthy of recommendation to German-reading chemists anywhere.

Ferdinand Enke Verlag. Stuttgart-W: *Die Methoden der Mikroanalyse,* by G. Mika; 2nd ed., 390 pp. (76 ill.); DM 66.—A textbook teaching the micromethods of volumetric analysis—theories, equipment, and applications. Numerous experiments are described to enable the reader to acquire with little effort and a minimum of special apparatus perfection in microanalytical procedure. • *Geologisches Woerterbuch,* by H. Murawski; 4th ed., 210 pp. (59 ill.); DM 19.50.—A condensed dictionary containing a wealth of specific information about geology and related terms. • *Organische Faellungsmittel in der quantitativen Analyse,* by W. Prodinger; 4th ed., 261 pp., DM 35.60.—This excellent monograph on organic reagents used in gravimetric analysis is based on the same 32 compounds discussed in the 35th edition, but includes additional literature references.

Urania-Verlag, Leipzig: *Die Bodenuntersuchung in der Landwirtschaft,* by H.-E. Freytag. A 55-page pamphlet explaining physical, chemical, and biological methods of soil investigation.

Gustav Fischer Verlag, Jena: *Bakteriochemie,* by E. M. Gubarjew; 1958, 225 pp. (41 tables); DM 25.80.—This textbook translated from the Russian deals with all the questions which are of immediate concern to biochemists, bacteriologists, and physicians, particularly those interested in the investigations of proteins, mineral substances, toxins and vitamins. Each chapter contains numerous references to works published anywhere in the world.

Akademie-Verlag, Berlin W 8: *Gerbereichemie und Gerbereitechnologie,* by F. Stather; 3rd ed., 974 pp. (239 ill.). DM 88.—All that is known about the chemistry and technology of tanning, from hides and skins to the various types of leather and furs, is gathered in this well-organized up-to-date treatise. • *Polarographie und die chemische Konstitution organischer Verbindungen,* by K. Schwabe, *et al.* 1958, 457 pp.; DM 39.—The first collection of tables listing, according to polarographically active groups the constitutional formulas and half-wave potentials of almost 1700 organic compounds, together with pH values and solvents used, and other data, including literature references. An index of all compounds makes it easy to find the data. Also those who do not understand German should be able to utilize the valuable material offered in these tables.

Springer-Verlag, Berlin W 35. *Tabellen zur Roentgenstrukturanalyse,* by E. Segel; 1958, 212 pp.; paperbound DM 28.—Another compilation of tables which should prove helpful to those who are in need of dependable facts, figures, and formulas for determining the structures of various materials by X-ray analysis.

A. Ziemsen Verlag, Wittenberg Lutherstadt: *Holz unter Lupe und Mikroskop,* by R. Wagenfuehr; 1957, 70 pp. (61 ill.); paperbound DM 5.20.—A booklet on the characteristics and chemistry of wood, with magnified pictures showing the structure of different kinds of wood.

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Opportunities for Chemists Increase in High Temperature Technology

Some 700 scientists, engineers and industrialists gathered in Asilomar, California, in early October, in recognition of the heightening significance of high temperature technology. The occasion was a three-day International Symposium on High Temperature Technology arranged by Stanford Research Institute and sponsored by 11 industrial concerns and 6 U. S. Government agencies.

In an informal setting overlooking the Pacific, attendees heard 23 reviews of high temperature equipment, materials, and processes. An added touch was the description of activities in this technology in Japan, West Germany, France, Scandinavia and England.

The future opportunities for chemists in the field of high temperature technology were considered to be excellent. As expressed by one of the participants:

> "Much of the advancement in high temperature materials in the past has involved disciplines other than high temperature chemistry. However, as the demands have increased, the need for a more fundamental understanding of the properties of the materials at high temperature has required investigations for which the chemist is particularly suited.
>
> "The thermodynamics of reactions occurring in the solid state and in the reactions of gases with solids will require an increasing participation by chemists versed in these areas.
>
> "There is also considerable need for chemists in the development of fuels with higher energy contents, for the analysis of products formed during their combustion, and for the determination of reaction rates in such processes.
>
> "The electronics engineers will work hand-in-hand with solid state chemists to produce devices that can operate under conditions of extreme temperature."

About AIC Members

Dr. J. T. Thurston, F.A.I.C., has been named manager of research and development of the Agricultural Division of American Cyanamid Co., New York 20, N. Y.

Dr. W. E. Hanford, F.A.I.C., vice president for research and Development, Olin-Mathieson Chemical Corp., received the honorary D.Sc. degree from Alfred University, Alfred, N. Y., on Oct. 15, at the Founder's Day convocation.

Dr. Robert N. DuPuis, F.A.I.C., vice president and director of research for Philip Morris, Inc., speaking at the dedication of the new multi-million dollar Philip Morris Research Center, Richmond, Va., stated that the Center presently has over 150 researchers and technicians, a number which might well be doubled within the next four years.

Dr. Delta Warren Gier, F.A.I.C., is now professor of chemistry and associate director of the Ford Foundation Experimental Education Project at Austin College, Sherman, Texas.

Dr. Vanston H. Ryan, F.A.I.C., professor and head of the department of chemistry, Rockhurst College, Kansas City, Mo., and chairman-elect of the Midwest AIC Chapter, received the Chancellor award from the college at the 50th Anniversary commemoration dinner.

Dr. Andrew J. Bartilucci, M.-A.I.C., dean, College of Pharmacy, St. John's University, Jamaica 32, N. Y., announces that the second Annual Congress for Pharmacists will be held at the College on March 17, 1960. All those in the pharmaceutical field are invited.

Raymond Stevens, Hon. AIC, president, Arthur D. Little, Inc., Cambridge 42, Mass., announces that the firm will open an office in Zurich, Switzerland.

Dr. Claude K. Deischer, F.A.-I.C., associate professor of chemistry, University of Pennsylvania, Philadelphia 4, Pa., received one of the newly established faculty awards for "excellence in undergraduate teaching," at ceremonies opening the 220th year of the University.

Turco Products, Inc., Wilmington, Calif., and Wilkings Plastics Co., Inc., jointly announce the formation of Turco-Wilkings Chem-Plastics, Inc., to conduct the former Wilkings Plastics Co., Inc., operation. **William D. Briggs,** F.A.I.C., of Turco Products, will serve as vice president and sales manager.

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Dr. Kenneth L. Russell, F.A.-I.C., director of research and development, Toilet Articles Div., Colgate-Palmolive Co., New York 22, N.Y., announces that Dr. J. M. Longfellow is now head of the Oral Products Section.

Dr. William H. Bowman, F.A.-I.C., general manager, Organic Chemicals Div., American Cyanamid Co., New York 20, N. Y., announces that R. E. Leach has been appointed manager of the Marietta, Ohio, plant.

Dr. Allan R. A. Beeber, F.A.-I.C., now heads Beeber Development Associates, at 615 Union Ave., Elizabeth, N. J.

Dr. Eric J. Hewitt, F.A.I.C., vice president of Evans Research & Development Corp., New York 17, N. Y., announces that a Radioisotope Laboratory, equipped for basic research and industrial applications of radioisotopes, has been installed by the corporation.

Dr. Paul H. Margulies, F.A.I.C., manager, Metals Section, Central Research Laboratories of Food Machinery & Chemical Corp., Princeton, N. J., has been chosen president-elect of the Etched Circuits Society.

Dr. Morton J. Klein, F.A.I.C., was named supervisor of propellant chemistry at Armour Research Foundation of Illinois Institute of Technology, Chicago, Ill. He has been with the Foundation since 1953.

Basil J. Wasyliw, A.A.I.C., has joined the Process Improvement & Development Department of the Eastern Chemical Division, Hooker Chemical Corp., Niagara Falls, N. Y.

Dr. Albert C. Zettlewoyer, F.A.I.C., professor of chemistry at Lehigh University, has been elected to the Board of Trustees of the Gordon Research Conferences.

George F. Foy, F.A.I.C., has joined the Chemetron Corporation as manager of commercial development, Chemical Products Division.

Peter James Franco, M.A.I.C., announces the removal of his office for the general practice of law to 233 Broadway, New York, N. Y.

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Dr. L. F. Yntema, F.A.I.C., is now acting as consultant, at Bjorksten Research Labs., Madison, Wis., on research and development of foamed metals.

Dr. Frank A. Newby, Jr., A.A.I.C., in September became assistant professor of chemistry at East Tennessee State College, Johnson City, Tenn.

Dr. Martin Gold, A.A.I.C., is now biochemist at the Lipid Research Institute, Hahnemann Medical College, Philadelphia, Pa.

Dr. William A. LaLande, F.A.I.C., vice president and technical Director, Pennsalt Chemicals Corp., Philadelphia 2, Pa., announces that **Dr. Paul Lipsitz,** F.A.I.C., has joined the staff of the Patent Department of the firm.

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As an individual he must be curious as well as willing to solve the problem; he should not deliberately go around it. He may start with free wheeling in his creative thinking, he may use the brain-storming technique in the early stages of his consideration; however, soon he must start to screen possibilities and organize for action. It is necessary to consider timing and determine whether a crash program or the use of a crash team is required, or if time will permit the adoption of an orderly and more scientific approach. Proper motivation and speed are often the key to success.

The director of the activity must keep gentle tension on the reins; he must provide proper guidance; he must give due encouragement; he must create the competitive spirit always present in a well-matched team; he must make the necessary correction as his team travels forward meeting the challenge. With all of this, he must give credit and praise where it is due.

—Dr. Wayne E. Kuhn, F.A.I.C.

Speaking at the 41st National Meeting of the AIChE, St. Paul, Minn.

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